

## **REMARKS**

Claims 1-2, 4-30 and 32-44 are pending in the present application. The rejections under 35 U.S.C. 102 and 35 U.S.C. 103 are respectfully traversed. However, in order to further the prosecution of this application, the pending claims have been amended in order to further distinguish them from the cited art. Support for the claim amendments can be found in the specification and drawings, in particular in paragraphs 0120 and 0128-0130 of US 2004/0160933 (published version of the present application). No new matter has been added. Applicants believe that the present application as amended is now in condition for allowance of which prompt and favorable action is respectfully requested.

By this amendment, some of the pending claims have been amended to cure informalities and typographical errors noticed by the Applicants.

### 35 U.S. C. 102 Rejection

Claims 11, 13, 16, 18, 20, 23, 24, 33, 34, 36, 38, 40, 42, 44 were rejected under 35 U.S.C. 102(b) as being anticipated by Schilling et al. (US 6,061,359). Claims 14, 15, 19, 35, 39, 43 were rejected under 35 U.S.C. 102(b) as being anticipated by Tiedemann et al. (US 5,914,950).

Applicants respectfully traverse these rejections for the reasons stated below. The MPEP recited the standard to be applied in an issue of anticipation under 35 USC 102.

Section 2131 of the MPEP states in part:

### **TO ANTICIPATE A CLAIM, THE REFERENCE MUST TEACH EVERY ELEMENT OF THE CLAIM**

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior

art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987)."

"The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989). *See also* MPEP § 2131."

Schilling fails to teach all the elements of the claims and no *prima face* case of anticipation can be supported. Similarly, Tiedemann fails to teach all the elements of the claims and no *prima face* case of anticipation can be supported. As amended, the pending claims recite a Hadamard covering with covering sequences with pattern repetition and subsequent covering with I and Q Walsh covering sequences.

For example, claim 1 recites the claim elements of "a first Hadamard encoder for receiving a plurality of symbol streams ... and encoding each of the symbol streams with one of a plurality of covering sequences with pattern repetition to form a plurality of covered streams...a second encoder for covering the first CDM signal with an I and Q Walsh covering sequence to form a first covered CDM signal." In another example, claim 16 recites the claim elements of "a first despreader for despreading the received CDM signal with the first I and Q Walsh covering sequence to produce a despread CDM signal .. a second Hadamard despreader for despreading the selected TDM signal with one of the second covering sequences with pattern repetition to produce a recovered symbol sequence."

Support for the claim amendment is found in the Present Application, for example, in paragraphs 0120 and 0128-0130.

"FIG. 8 depicts an embodiment utilizing pattern repetition. While this embodiment may be generalized, in similar fashion as detailed with respect to FIG. 7, the F-CAKCH is used once more for illustrative purposes. This embodiment uses a CDM approach with pattern-repetition. 48 input sequences, F-CAKCH bits for mobile IDs 0-47, in this example,

are delivered to 48-symbol encoders 810A-810N and 820A-820N, for the I and Q channels, respectively. Each 48-symbol encoder uses 2 24-symbol Hadamard Sequences. The encoded outputs are gain adjusted in channel gain blocks 830A-830N and 840A-840N, respectively. Summer 850 combines the respective gain adjusted encoded sequences to produce an I channel CDM signal. Summer 860 combines the respective gain adjusted encoded sequences to produce a Q channel CDM signal. (Note that, as before, using both the I and Q channels to transmit signals is not required. Alternate embodiments may use other modulation schemes, within the scope of the present invention.) The I and Q CDM signals are covered again in multipliers 870 and 880, using complex covering sequence  $\underline{W}_i^{128}$ , to produce the I and Q F-CAKCH outputs that may be combined with other signals in CDM fashion and transmitted to one or more mobile stations. Thus, FIG. 8 illustrates yet another embodiment of a CDM on CDM encoding approach. One advantage of the embodiment of FIG. 8 is that the orthogonal period is reduced from 5 ms to 2.5 ms. Therefore, there is less cross-talk interference from the other possible users of that F-CAKCH. In this example, the repetition used in encoders 810 and 820 does not repeat the same Hadamard sequences, but rather a different sequence for the second transmission is used. So if, for example, a particular user is causing interference to another user on the first transmission, that same user doesn't cause the same interference on the second transmission.” *Present Application (US 2004/0160933), paragraphs 0129-0130.*

“In a first embodiment, an orthogonal period of 1/2400 seconds is generated by using M=4 and L=12, on both the I and Q channels, to combine 96 input sequences comprising ACK/NAK/Ack-and-Continue commands directed to up to 96 mobile stations with a 128-chip Walsh cover sequence at 1.2288 Mcps.” *Present Application (US 2004/0160933), paragraph 0128.*

The pending claims recite the feature of using a combination of Hadamard covering sequences with pattern repetition and subsequently Walsh covering, prior to the transmission of the CDM signal. The Hadamard covering sequences are repeated to minimize cross-talk interference among the various users.

In addition, the pending claims been amended to clarify that the subsequent Walsh codes are used to perform I and Q covering for higher rate spreading on the I and Q arms of the output stage as illustrated in Figures 6-8.

“The outputs of summers 650 and 660 are the I and Q CDM signals, respectively. Each comprises 48 symbols per 5 ms (9.6 ksps) for transmission on the I and Q arms. These signals are covered using an I and Q covering sequence, collectively identified by  $W_i^{128}$ , in multipliers 670 and 680, respectively, to produce the I and Q F-CAKCH outputs at 1.2288 Mcps.” *Present Application (US 2004/0160933), paragraph 0120.*

In contrast, Schilling (US 6,061,359) teaches using Barker sequences for the first set of covering sequences, wherein it is further disclosed that “each Barker sequence is a shift of the original Barker sequence of length 11” and thus is not a pattern repetition. (See Schilling, col. 17, lines 65-67.)

Thus, Schilling does not disclose using Hadamard covering sequences with pattern repetition, and furthermore, Schilling does not disclose using a second set of covering sequences.

Also in contrast, Tiedemann (US 5,914,950) teaches using Walsh codes for a first covering, but does not explicitly state using sequences with pattern repetition. It is further taught that the Walsh covered sequences are covered by long and short PN sequences, which is not equivalent to using I and Q Walsh covering sequences as the subsequent covering of the pending claims.

“Within modulator 74, the encoded data is routed through DEMUX 146 and provided to a bank of Walsh code modulators 182. Walsh code modulators 182 spreads the encoded data with unique Walsh codes to provide orthogonality between the code channels.” *Tiedemann (US 5,914,950), column 27, lines 20-24.*

“The outputs from the first Walsh code channel and secondary Walsh code channels are combined by summer 188 and the resultant signal is modulated with the long PN code by multiplier 190. The long PN code modulated signal is further spread by the short  $PN_I$  and  $PN_Q$  codes by multipliers 192a and 192b, respectively.” *Tiedemann (US 5,914,950), column 27, lines 43-48.*

Thus, there is no teaching in Tiedemann of a Hadamard covering with covering sequences with pattern repetition and then covering with I and Q Walsh covering sequences.

As shown above, Schilling and Tiedemann each fails to teach every element of the pending claims and no *prima facie* case of anticipation can be supported. Withdrawal of the 35 U.S.C. 102 rejections based thereon is respectfully requested.

### 35 U.S. C. 103 Rejection

Claims 1, 2, 4, 5, 7, 10, 17, 21, 22, 25-28, 30, 32, 37, 41 were rejected under 35 U.S.C. 103(a) as being unpatentable over Tiedemann et al. (US 5,914,950) in view of Ho et al. (US 6,751,264). Claims 3 and 31 were rejected under 35 U.S.C. 103(a) as being unpatentable over Tiedemann et al. (US 5,914,950) and Ho et al. (US 6,751,264) in view of Agrawal et al. (US 6,134,215). Claims 6 and 29 were rejected under 35 U.S.C. 103(a) as being unpatentable over Tiedemann et al. (US 5,914,950) and Ho et al. (US 6,751,264) in view of Kanterakis et al. (US 6,389,056).

The MPEP recited the standard to be applied in an issue of obviousness under 35 USC 103. Section 2143.03 of the MPEP states in part:

### **ALL CLAIM LIMITATIONS MUST BE CONSIDERED**

"All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. 103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988).

The factual inquiries that are relevant in the determination of obviousness are determining the scope and contents of the prior art, ascertaining the differences between the prior art and the claims in issue, resolving the level of ordinary skill in the art, and

evaluating evidence of secondary consideration. KSR Int'l Co. v. Teleflex Inc., 550 U.S. \_\_\_, 2007 U.S. LEXIS 4745, at \*\*4-5 (2007) (citing Graham v. John Deere Co. of Kansas City, 383 U.S. 1, 17-18 (1966)). To establish a *prima facie* case of obviousness, the prior art references “must teach or suggest all the claim limitations.” M.P.E.P. § 2142. Moreover, the analysis in support of an obviousness rejection “should be made explicit.” KSR, 2007 U.S. LEXIS 4745, at \*\*37. “[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” Id. (citing In re Kahn, 441 F.3d 977, 988 (Fed. Cir. 2006)).

As shown above, Tiedemann does not disclose the claim elements of a Hadamard covering with covering sequences with pattern repetition and then covering with I and Q Walsh covering sequences as recited in the pending claims. The cited secondary references (Ho, Kanterakis and Agrawal), either separately or in combination, do not make up for what Tiedemann does not disclose.

Ho was cited for teaching “a selector for selecting the summer from among a plurality of summers.” This claim element has been deleted from the pending claims. Additionally, Ho does not disclose a Walsh covering, a Hadamard covering or pattern repetition, which are recited elements in the pending claims.

Kanterakis was cited for disclosing that command values also indicate negative acknowledgement, or acknowledge and continue. Although Kanterakis discloses generic spreading sequences, there is no disclosure of a Walsh covering, a Hadamard covering or pattern repetition, which are recited elements in the pending claims.

Although, Agrawal discloses using Walsh sequences for the first covering and discloses constructing Walsh sequences with pattern repetition, the disclosure stops there. See Agrawal (US 6,134,215), column 5, lines 15-43. There is no disclosure of using I and Q Walsh covering sequences as the subsequent covering to a first Hadamard covering with pattern repetition. Instead, in Agrawal the “orthogonally covered data signal  $S(t)W(t)$  output by multiplier 202 is input to logic element or multiplier 204 which multiplies the signal by a PN spreading code.” Agrawal (US 6,134,215), column 7, lines 27-29.

Thus, the cited references, either taken separately or in combination, do not disclose, teach, suggest or make obvious all of the features of pending claims and the rejection should be withdrawn accordingly.

### **CONCLUSION**

For the reasons stated above, the prior art references cited in the Office Action do not anticipate, disclose, teach, suggest or make obvious the pending claims. Thus, Applicants respectfully request withdrawal of the 35 U.S.C. 102 and 35 U.S.C.103 rejections based thereon.

### **ALLOWABLE SUBJECT MATTER**

Applicants thank the Examiner for indicating the allowability of claims 8 and 9. As the amendments made herein are believed to resolve the outstanding rejections of the pending claims, all the pending claims are now believed to be allowable.

## **REQUEST FOR ALLOWANCE**

In view of the foregoing, Applicants submit that all pending claims in the application are patentable. Accordingly, reconsideration and allowance of this application are earnestly solicited. Applicants do not believe that any fees are due regarding this amendment. However, if any fees are required, please charge Deposit Account No. 17-0026. Applicants encourage the Examiner to telephone the Applicants' attorney should any issues remain.

Respectfully submitted,

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